

# Notice of Allowability

Application No.

09/865,763

Examiner

Nader Bolourchi

Applicant(s)

MITLIN, VLAD

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 4/5/2007.
2. ☒ The allowed claim(s) is/are Claims 1, 4-17, 19-20, 22-24, 26, and 29-42 are allowed, which are renumbered as 1, 2-14, 15-16, 17-19, 20, and 21-34, respectively.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

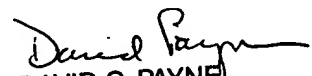
\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

  
DAVID C. PAYNE  
SUPERVISORY PATENT EXAMINER

## DETAILED ACTION

### *Remarks*

1. Applicant canceling claims 2-3, 18, 21, 25, and 27-28 is acknowledged.
2. Applicant's amendment dated 4/5/2007 is entered.
3. Claim objections are withdrawn.
4. Claim rejections under 35 USC § 112 are withdrawn.
5. Claims rejections under 35 USC § 103 are withdrawn.

### *Allowable Subject Matter*

6. Claims 1, 4-17, 19-20, 22-24, 26, and 29-42 are allowed, which are renumbered as 1, 2-14, 15-16, 17-19, 20, and 21-34, respectively.
7. The following is an examiner's statement of reasons for allowance:

The instant application discloses a method of selecting a bit load per sub-channel in a multi-carrier system. Prior art references show similar methods but fail to teach:

determining an average number of bit errors in an erroneous tuple based on said probability and selecting is also based on the average number of bit errors in the erroneous tuple, as in claim 1; wherein said average number of bit errors in the erroneous tuple is determined as recited in claims 4; the probability  $p(k,b)$  is determined, as recited in claims 5-6 and 29-30; wherein said probability approaches  $1/2^k$  for constellations which have large values of  $b$ , as in claims 7, 31; wherein

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said mean squared deviation of the number of bit errors in an erroneous tuple is determined based on the relationship recited in claims 11 and 35; wherein at large values of  $b$ , the mean square deviation of the number of bit errors in an erroneous tuple tends to be the square root of two, as in claim 36; access in a table of associated values of the number of bits and the values of the mean square deviation of the number of bit errors in an erroneous tuple to retrieve a value of a particular mean square deviation of the number of bit errors in an erroneous tuple for a particular value of  $b$ , as in claims 13, 37; selecting at least one forward error correction parameter based on said adjusted target bit error rate, as in claims 14, 38; determining a probability of having  $k$  bit errors in an erroneously decoded tuple, as recited in claims 15, 39; wherein said constellation is non-square, and said probability of having bit errors in an erroneously decoded tuple of the non-square constellation is estimated as if said non-square constellation was a square constellation, as in claim 16; wherein said constellation is non-square, and said probability of error of said non-square constellation become asymptotically close to the probability of error of a squared constellation encoder, as in claim 17; determining a probability of having  $k$  bit errors in a  $n$  erroneously decoded tuple based on the self-similarity property of the constellation, wherein said probability of having  $k$  bit errors in an erroneously decoded tuple of the non-square constellation is estimated as if said non-square constellation was a square constellation, as in claims 19 and 23; determining an average number of bit errors in an erroneous tuple based on said probability and

selecting is also based on the average number of bit errors in the erroneous tuple, as in claim 26; wherein the constellation is non-square, as in claim 33; determining a mean square deviation of the number of bit errors in an erroneous tuple; wherein said selecting further comprises selecting the bit load per sub-channel based on said mean square deviation of the number of bit errors in a erroneous tuple, as in claim 34; wherein said constellation is non-square, and said probability of having bit errors in an erroneously decoded tuple of the non-square constellation is estimated as if said non-square constellation was a square constellation, as in claim 40; wherein said constellation is non-square, and said probability of error of said non-square constellation becomes asymptotically close to the probability of error of a squared constellation encoder, as in claim 41 along with the remaining limitations of the independent claims.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### ***Contact Information***

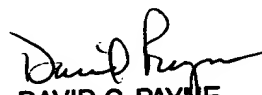
9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nader Bolourchi whose telephone number is (571) 272-8064. The examiner can normally be reached on M-F 8:30 to 4:30.

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10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).

Nader Bolourchi  
4/10/2007  
Art Unit 2611

  
DAVID C. PAYNE  
SUPERVISORY PATENT EXAMINER